

WHAT IS CLAIMED IS:

1. A connector, comprising:

first and second housings (20; 10) connectable with each other along a connecting direction (CD);

a movable member (40) with a cam (44), the movable member (44) being movable on the first housing (20) in a moving direction (PD) intersecting the connecting direction (CD);

a mating cam (17) on the second housing (10) and engageable with the cam (44), the mating cam (17) being displaced with respect to the cam (44) during a period from an initial stage of connection of the housings (10, 20) substantially to a completion of the connection as the movable member (40) is moved for connecting and separating the housings (10, 20); and

a holding mechanism (18, 48; 19, 69) spaced from a position where the mating cam (17) engages the cam (44) and configured for locking the second housing (10) to one of the first housing (20) and the movable member (40) during a time between an intermediate stage of the connection of the housings (10, 20) substantially to the completion of the connection.

2. The connector of claim 1, wherein the cam (44) is a main cam groove (44) and the mating cam (17) is a main follower pin (17), the holding mechanism (18, 48; 19, 69) comprising an auxiliary follower pin (18; 19) at a location on the second housing (10) spaced from the main follower pin (17) and an auxiliary cam groove (48; 68) on the movable member (40) at a location for engaging the auxiliary follower pin (18; 19) between an intermediate stage of the connection of the housings (10, 20) and the completion of the connection.

3. The connector of claim 2, wherein the auxiliary cam groove (48; 68) is arranged to at least partly overlap the main cam groove (44) with respect to the moving direction (PD) of the slider.

4. A connector, comprising:

a housing (20) connectable with a mating housing (10) along a connecting direction (CD), the mating housing (10) being formed with at least one follower pin (17);

a movable member (40) formed with at least one cam groove (44) having a starting end (44A) and a terminus end (44E), the movable member being mounted to the housing (20) for movement in an operating direction (PD) intersecting the connecting direction (CD) of the housings (20, 10), the cam groove (44) being engageable with the follower pin (17) on the mating housing (10) and being formed such that the follower pin (17) is displaced from the starting end (44A) to the terminus end (44E) of the cam groove (44) as the movable member (40) is operated for moving the housings (20, 10) to a properly connected state; and

the cam groove (44) further comprises a returning portion (44D) near the terminus end (44E) of the cam groove (44) and configured to displace the housings (20, 10) in separating directions (SD) as the follower pin (17) is moved toward the terminus end (44E) in the cam groove (44).

5. The connector of claim 4, wherein the cam groove (44) comprises a substantially straight portion (44B) inclined with respect to the operating direction (PD).

6. The connector of claim 5, wherein the returning portion (44D) is inclined with respect to the operating direction (PD) in a direction opposite to an inclination of the substantially straight portion (44B).

7. The connector of claim 4, wherein the cam groove (44) comprises a peak (44C) near the returning portion (44D).

8. The connector of claim 4, wherein an angle of inclination ( $\alpha$ ) of a front edge of the returning portion (44D) is in a range from about 10° to about 5° to the operating direction (PD) of the operable member (40).

9. A connector assembly, comprising:

a housing (20) and a mating housing (10) that are connectable along a connecting direction (CD), the mating housing (10) being formed with at least one follower pin (17);

a movable member (40) formed with at least one cam groove (44) having a starting end (44A) and a terminus end (44E), the movable member being mounted to the housing (20) for movement in an operating direction (PD) intersecting the connecting direction (CD) of the housings (20, 10), the cam groove (44) being engageable with the follower pin (17) on the mating housing (10) and being formed such that the follower pin (17) is displaced from the starting end (44A) to the terminus end (44E) of the cam groove (44) as the movable member (40) is operated for moving the housings (20, 10) to a properly connected state; and

the cam groove (44) further comprises a returning portion (44D) near the terminus end (44E) of the cam groove (44) and configured to displace the housings (20, 10) in separating directions (SD) as the follower pin (17) is moved toward the terminus end (44E) in the cam groove (44).

10. The connector assembly of claim 9, further comprising means for generating biasing forces between the housings (20, 10) to separate the housings (20, 10) before the housings (20, 10) are connected properly:

11. The connector assembly of claim 9, further comprising at least one seal (134; 123) configured for airtight sealing of an inner space between the housings (20, 10) in the properly connected state of the housings (20, 10).

12. The connector assembly of claim 11, wherein an inner pressure of the inner space gradually increases to create biasing forces acting on the housings (20, 10) in separating directions (SD) as the housings (20, 10) are brought closer to each other.

13. The connector assembly of claim 12, wherein when the follower pin (17) has reached the returning portion (44D), the biasing forces brought about by the inner pressure between the housings (20, 10) urge the housings (20, 10) in separating directions (SD) to pull the operable member (40), so that resistance acting on the operable member (40) suddenly decreases and the movable member (40) is moved to the advanced position with an addition of an inertial force.